Ever wondered what it's like to be a doctor? Dentist or perhaps a pharmacist? Ever think about all the difficult stuff they study and have to deal with in real life?
Well I've always wondered the same but I never knew where to look for information. Everything seemed too complicated. So I decided to write this book. It's a comprehensive guide to getting a foundational understanding of what it's like to work in such a field.
I've been in your place before, a curious teen interested in finding out more about the medical/scientific field. But where do you start? This book is written for anyone (most specifically teens) that is interested in pursuing a career in the medical field.

Please keep in mind that this is a teen-friendly intro not a textbook.

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This book will be divided into three sections

Chapter 1: Medicine
Section 1 : type 1 and type 2 diabetes
Section 2 : asthma
Section 3 : cancer

Chapter 2: Dentistry
Section 1 : cavities
Section 2 : tooth anatomy 101
Section 3 : gum diseases

Chapter 3: Pharmacy
Section 1 : how medicine works
Section 2 : side effects of taking medicine
Section 3 : how medicine is made

If you've ever said, “I want to be a doctor,” or even just, “The human body is kind of fascinating,” then this section is for you.

Being a doctor means understanding how the body works when it's working normally. By the end of this section, you'll get a simple taste of what it's like to have that white coat on.

Chapter 1 Section 1: Diabetes (Type 1 & Type 2)

Systems involved: Endocrine (hormones), Circulatory (blood)

Let's start with the main question: What Even Is Diabetes?

Diabetes is a condition where your body has trouble managing sugar (glucose) in the blood. And what is sugar used for in the body? It’s your fuel.

But too much sugar in the blood can cause serious damage especially if it goes untreated.

Here’s the main player: insulin.
It’s a hormone made by an organ called the pancreas (an organ located in the abdomen). Think of insulin like a key that unlocks your body’s cells so sugar can enter and be used as energy.

Without insulin (or if your body doesn’t respond to it well) sugar stays in your blood instead of going into your cells. And that’s when the issues start.

We have 2 types of diabetes

Type 1 Diabetes

- Usually shows up in childhood or teenage years
- The immune system attacks the pancreas (by mistake)
- The body stops making insulin
- People need daily insulin injections
- Not caused by sugar or food—it's autoimmune

Type 2 Diabetes

- More common in adults but have seen an increase in teens
- The body makes insulin but doesn't use it well (insulin resistance)
- Often linked to diet, weight, and lifestyle
- Managed with healthy habits, medication, and sometimes insulin.

Some common symptoms include:

- Feeling tired all the time
- Being super thirsty
- urinating a lot
- Blurry vision
- Losing weight without trying

Why Does It Matter?

Diabetes affects nearly 1 in 10 people worldwide. If it's not managed, it can lead to:

- Heart disease
- Nerve damage
- Kidney failure
- Vision loss

But here's the good news:

With the right care, people with diabetes live full, active lives.

- **Keywords from this section**

Pancreas – The organ that makes insulin

Hormone – A chemical messenger in the body

Glucose – Sugar in the blood

Insulin resistance – When your body doesn't respond to insulin properly

Chapter 1 Section 2: Asthma

Systems involved: Respiratory (lungs), Immune system

What Is Asthma?

Asthma is a long-term condition that affects the airways in your lungs aka the tubes that carry air in and out when you breathe.

If you have asthma, those airways are extra sensitive. Meaning that they can get tight, swollen, and full of mucus when something triggers them which makes it harder to breathe.

What Happens During an Asthma Attack?

During an asthma attack:

- The muscles around your airways tighten
- The lining of the airways swells up
- Extra mucus clogs the space

This makes it hard to breathe, and you might feel the side effects such as:

- Chest tightness
- Coughing
- Wheezing (a whistling sound when breathing)

- Shortness of breath

What Triggers Asthma?

Triggers are different for everyone, but common ones include:

- Dust
- Pollen
- Cold air
- Exercise
- Smoke
- Stress
- Pets
- In some cases even laughing too hard can set it off

Inhalers: What Are They and How Do They Help?

You've probably seen people use those little tube-shaped devices called inhalers.

There are two main types:

- **Rescue inhalers** (quick relief) – used during an attack to open airways fast
- **Controller inhalers** – used daily to prevent attacks by keeping inflammation down

How Common Is Asthma?

Asthma affects over 250 million people worldwide and that includes millions of teens.

- **Keywords from this section**

Airways – The tubes that carry air to and from your lungs
Inflammation – Swelling that makes breathing harder
Wheezing – A whistling sound when air squeezes through tight airways
Inhaler – A device that sprays medicine into your lungs

Chapter 1 section 3: Cancer

Systems involved: Almost any system

What is cancer?

Cancer isn't just one disease instead it's actually a group of diseases. What they all have in common is this:

> **Cells start growing out of control.**

Your body is made of trillions of cells. Normally, they grow, divide, and die in a controlled way. But sometimes, something goes wrong in a cell's DNA, and it starts to multiply nonstop.

That group of fast-growing, abnormal cells becomes a tumor (a lump of extra cells), and if it spreads it can damage organs, blood, bones, almost anything.

So how do people get cancer?

Cancer can happen for different reasons:

- DNA damage from smoking, radiation, or chemicals
- Family history (some people inherit it)
- Viruses like HPV (a virus that can cause cervical cancer)
- Unlucky mutations that just happen

Signs of Cancer

There are over 100 types of cancer so symptoms vary alot. But common signs might include:

- A lump that doesn't go away
- Constant tiredness
- Weight loss without trying
- Pain that won't go away
- Changes in the skin, moles, or bathroom habits

Important to note: These symptoms don't always mean cancer. But if they stick around, it's better to get them checked.

Some Common Types of Cancer Include

- Breast cancer
- Lung cancer
- Leukemia
- Skin cancer
- Colon cancer

Keywords from this section

Tumor – A lump of abnormal cells
Malignant – A cancerous tumor that can spread
Benign – A non-cancerous tumor
Chemotherapy – Strong medicine that kills fast-growing cells
Radiation – Energy used to shrink or kill cancer cells
Immunotherapy – A treatment that helps your immune system fight cancer

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If you've ever said, "I want to be a dentist" then you are in the right place.

Let's begin shall we?

Chapter 2 section 1: cavities

What Are Cavities?

A cavity is a hole/damage in your tooth caused by decay.
It starts small but if you ignore it will grow deeper and become more painful and difficult to treat.

System involved: tooth/teeth

Your mouth is full of bacteria. Some are helpful but others love sugar and when they eat it they make acid. That acid wears down your tooth's hard outer layer (called the enamel).

If it keeps growing it'll even reach your nerves, in such cases the person will be suffering from a lot of pain.

What Causes Cavities?

- Eating lots of sugary or starchy foods
- Not brushing or flossing properly
- Drinking soda too often
- Not getting regular dental checkups

Signs You Might Have a Cavity

- Toothache
- Pain when eating sweets or cold/hot foods
- Visible holes or dark spots
- Bad breath that won't go away

If it hurts to chew on one side of your mouth, don't ignore it. It might be tooth decay.

How Do Dentists Treat It?

1. **Early stage:** They may use fluoride to help re-strengthen the enamel
2. **Mild cavity:** A filling, dentist removes the decay and replaces it with special material
3. **Deep cavity:** You might need a root canal (they clean out the infected nerve)
4. **Too far gone:** The tooth may need to be extracted

Keywords from this section

Enamel – Hard outer layer of the tooth
Dentin – Softer layer beneath enamel
Pulp – The center of the tooth with nerves and blood vessels
Filling – A material dentists use to repair a cavity
Plaque – Sticky layer of bacteria on your teeth

Chapter 2 section 3: tooth anatomy 101

Systems involved: Mouth

The 4 Main Layers of a Tooth:

1. Enamel: This is the white outer layer of your tooth. It's the hardest substance in your body, yes, even harder than bone. Enamel protects your tooth from bacteria and everything you chew.

2. Dentin: the dentin is under the enamel. It's yellowish and a bit softer. If enamel gets worn down, the dentin gets exposed. That's why your teeth might feel super sensitive to hot or cold things.

3. Pulp: Deep inside your tooth is the pulp. It holds the nerves and tiny blood vessels that keep your tooth functioning.

4. Cementum & Root: Below your gums cementum covers the tooth root and helps it attach to your jaw.

Types of Teeth and Their Jobs:

There are different types of teeth, and each one has a job.

- **Incisors** are the sharp ones in front and you use them to cut food
- **Canines** are pointy and they help you tear things

- **Premolars** and **molars** are flatter and they're in the back and help grind food.
- **Wisdom teeth** are extra molars that usually show up in your late teens. Many people get them removed because they cause problems.

Keywords from this section

- Enamel - outside layer of the tooth
- Dentin - Sensitive middle layer
- Pulp - Nerve center of the tooth
- Cementum - Root cover that keeps the tooth in place
- Cavity - A hole that forms when bacteria break through enamel
- Root canal - A treatment where the pulp is removed and replaced if it's infected

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Chapter 2 section 3: gum diseases

Systems involved: Gums

What Is Gingivitis?

Gingivitis is the early stage of gum disease. It's usually caused by plaque (a sticky layer of bacteria that builds up on your teeth when you don't brush or floss well.)

Signs of gingivitis:

- Red or swollen gums
- Gums that bleed when you brush or floss
- Bad breath that doesn't go away

But don't worry, not all hope is lost since Gingivitis is reversible if you start brushing, flossing, and visiting the dentist regularly!

What Is Periodontitis?

If gingivitis gets worse, it can turn into periodontitis which is a more serious form of gum disease. This is when bacteria go deeper under your gums and start damaging the bone that supports your teeth.

Signs of periodontitis:

- Gums pulling away from teeth (receding gums)
- Loose teeth
- Pus (usually white thicky paste like) or pain around your gums
- Permanent tooth loss (in serious cases)

What Causes Gum Disease?

- Poor brushing and flossing habits
- Smoking or vaping
- Hormonal changes
- Genetics
- Diabetes or a weak immune system

Keywords from this section

- Gingiva – gums
- Plaque – Sticky film or layer of bacteria
- Tartar – Hardened plaque that only a dentist can remove
- Deep cleaning – A special dental treatment to clean under the gums
- Receding gums – When gums pull away from your teeth
- Periodontal – Anything related to the structures around the teeth

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Chapter 3 section 1: how medicine works

Systems involved: Digestive system, bloodstream, liver, kidneys, immune system

What Happens to Medicine in Your Body

1. Absorption: Your body first has to absorb the medicine.
the pill goes through your stomach and intestines where it dissolves and enters your bloodstream.

2. Distribution: Once the drug is in your blood it travels all around your body. it goes to the place where it's needed like your brain (for a headache) or lungs (for asthma).

3. Metabolism: now it's your liver's turn. It processes the medicine and turns it into a form your body can use

4. Excretion: After the medicine does its job your body gets rid of what's left. This happens through either urination or pooping.

Different Ways to Take Medicine

- **Tablet or Capsule** : Swallowed, digested slowly
- **Liquid** : Easier for kids or fast absorption
- **Injection** : Goes straight into blood or muscle
- **Inhaler** : Goes directly to lungs
- **Cream or Gel** : Stays on the skin
- **Sublingual** : Dissolves under the tongue and goes straight to blood

Keywords from this section

- Bioavailability: How much of the drug actually reaches your blood
- Metabolism: How the body breaks down a drug
- Side effect: An extra reaction the drug causes
- Overdose: When too much of a drug is taken

Chapter 3 section 2: Side Effects, Allergies & Interactions

Systems involved: Immune system, liver, kidneys, nervous

What Are Side Effects?

Side effects are extra effects a medicine might cause besides its main job.

Examples:

- Feeling dizzy after a painkiller
- Stomach upset from antibiotics
- Rash or itching

Allergies to Medicine

An allergy happens when your immune system thinks a medicine is harmful and overreacts. Signs of an allergic reaction include:

- Rash or hives
- Swelling
- Difficulty breathing

Drug Interactions

Some medicines don't mix well with others, or with certain foods and drinks.

Examples:

- Taking antibiotics with dairy can lower their effectiveness
- Mixing painkillers and alcohol can damage your liver
- Some antidepressants interact dangerously with other drugs

Keywords from this section

- Absorption: How medicine gets into your blood after you take it.
- Side Effects: extra effects you get after taking medicine.
- Antibiotic: Medicine that fights bacteria to help you get better.
- Drug Interaction: When two medicines don't work well together.
- Dosage: How much medicine you should take and when.

Chapter 3 section 3: how medicine is made

Systems involved: Chemistry, biology, manufacturing

Step 1: Research

Scientists start by finding a chemical or natural substance that might help treat a disease. This can take months or even years, they test it in the lab to make sure its safe.

Step 2: Testing in the Lab

The chemical is tested on cells and animals first to check how it works and if it's safe, This helps find the right dose and possible side effects.

Step 3: Clinical Trials (Testing on People)

If lab tests go well, the medicine is tested in stages on volunteers. These are called clinical trials

Step 4: Manufacturing

After its approval the medicine is made in factories using strict rules to keep it safe and pure. Pills are mixed and packed for pharmacies.

Step 5: Getting on the shelves

Pharmacies stock the medicine and pharmacists make sure you get the right dose with clear instructions.

Keywords from this section

- **Clinical Trials**: Tests where medicines are given to people to check if they're safe and work well.
- **Approval**: When medicine passes all tests and gets permission to be sold.
- **Manufacturing**: The process of making lots of medicine in factories.
- **Quality Control**: Checking medicine to make sure it's safe, pure, and works right.
- **Regulators**: Groups (like the FDA) that make sure medicines are safe before they reach patients.

Credits & Thanks

Author: A.K
Book Title: *Your Guide to Medicine, Dentistry & Pharmacy*
Published: 2025

Thank you to everyone who helped me along this journey! my teachers, family, friends, and healthcare professionals who inspired me every day. Writing this book was a huge process for me and I hope you had fun reading it just as much as I've had fun writing this.

Disclaimer

This book is for educational purposes only and is not a substitute for professional medical advice, diagnosis, or treatment. Always talk to a qualified healthcare provider about any health concerns or before taking any medication.

Information in this book is based on current knowledge as of 2025 and may change over time as science advances.

Take care!